CLAIM AMENDMENTS

1-20. (canceled)

21. (new): A glycosylated or nonglycosylated composition of the formula

$$\beta^2 \approx \alpha\text{-(linker)}_m\text{-}\beta^1 \qquad (1); \text{ or}$$

$$\beta^1\text{-(linker)}_m\text{-}\alpha \approx \beta^2 \qquad (2)$$

wherein each of β^1 and β^2 has the amino acid sequence of the β subunit of a vertebrate glycoprotein hormone, or a variant thereof;

"α" has the amino acid sequence of the α subunit of a vertebrate glycoprotein hormone or a variant thereof;

"linker" is a linker moiety; and

"≈" is a noncovalent link between α and β^2;

m is 0 or 1;

with the proviso that if β^1 is CG then β^2 is not FSH.

22. (new): The composition of claim 21, wherein β^1 and β^2 correspond to different native *β* subunits.

23. (new): The composition of claim 21, wherein β^1 and β^2 exhibit different biological half-lives.

24. (new): The composition of claim 21, wherein one of β^1 and β^2 confers agonist activity and the other confers antagonist activity.

25. (new): The composition of claim 21, wherein both β^1 and β^2 confer FSH agonist activity; or

wherein both β^1 and β^2 confer CG agonist activity; or

wherein both β^1 and β^2 confer LH antagonist activity; or

wherein one of β^1 and β^2 confers FSH agonist activity and the other confers LH antagonist activity; or

wherein one of β^1 and β^2 confers FSH agonist activity and the other confers CG agonist activity; or

wherein one of β^1 and β^2 confers LH antagonist activity or lowered LH agonist activity and the other confers CG agonist activity.

26. (new): The composition of claim 21, wherein both β^1 and β^2 confer FSH antagonist activity; or

wherein both β^1 and β^2 confer CG antagonist activity; or

wherein both β^1 and β^2 confer LH agonist activity; or

wherein one of β^1 and β^2 confers FSH antagonist activity and the other confers LH agonist activity; or

wherein one of β^1 and β^2 confers FSH antagonist activity and the other confers CG antagonist activity; or

wherein one of β^1 and β^2 confers LH agonist activity and the other confers CG antagonist activity.

27. (new): The composition of claim 21, wherein one of β^1 and β^2 confers FSH agonist activity and the other confers LH antagonist activity; or

wherein both β^1 and β^2 confer FSH agonist activity; or

wherein both β^1 and β^2 confer LH antagonist activity.

28. (new): A pharmaceutical formulation which comprises an effective amount of the composition of claim 21 in admixture with at least one pharmaceutically acceptable excipient.

29. (new): Recombinant host cells modified to contain a nucleic acid comprising a first expression system comprising a nucleotide sequence encoding α-$(\text{linker})_m$-β^1 or β^1-$(\text{linker})_m$-α operably linked to a control sequence for the expression thereof and a nucleic acid comprising a second expression system comprising a nucleotide sequence encoding β^2 operably linked to a control sequence for the expression thereof;

wherein α, β^1, β^2, linker and m are as defined in claim 21.

30. (new): The cells of claim 29, wherein the first expression system and second expression system share the same control sequence.

31. (new): The cells of claim 29, wherein the first expression system and the second expression system reside on separate extrachromosomally replicating vectors.

32. (new): The cells of claim 29, wherein the first expression system and second expression system reside in a chromosome of the host cell.

33. (new): The cells of claim 29, wherein one of said first and second expression systems resides in the chromosome of said cells and the other is on an extrachromosomally replicating vector.

34. (new): The cells of claim 29, wherein both first and second expression systems reside on the same extrachromosomally replicating vector.

35. (new): A method to produce composition of formula (1) or (2) which method comprises

culturing the cells of claim 29 under conditions wherein said composition is produced; and

recovering said compositions from the culture.

36. (new): A method to provide a subject with glycoprotein hormone activities which method comprises administering to a subject in need of said activities a composition of claim 21 or a pharmaceutical formulation thereof.

37. (new): The method to treat a subject to enhance fertility, which method comprises administering to a subject in need of said treatment a composition of claim 25 or a pharmaceutical formulation thereof.

38. (new): The method to treat a subject to reduce fertility, which method comprises administering to a subject in need of said treatment a composition of claim 26 or a pharmaceutical formulation thereof.

39. (new): The method to treat a subject for polycystic ovarian disease, which method comprises administering to a subject in need of said treatment a composition of claim 27 or a pharmaceutical formulation thereof.